

Three new Noctuidae taxa from the Macaronesian archipelago

(Lepidoptera)

by

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Abstract: Three new Noctuidae taxa, *Phlogophora kruegeri* **spec. nov.** from Flores Island, *Phlogophora jarmilae* **spec. nov.** from Sao Miguel Island, both in the Azores, and *Cleonymia baetica hoferi* **subspec. nov.** from Fuerteventura Island in the Canary Island group, are described. It is the first time that faunal data from Flores Island and pictures of the ♀ genitalia of *Phlogophora interrupta* (HAMPSON, 1908), *Phlogophora cabrali* PINKER, [1971] 1969 and *Phlogophora wollastoni* ([BETHUNE]-BAKER, 1891), have been published.

Zusammenfassung: Von den Azoren werden *Phlogophora kruegeri* **spec. nov.** (Flores) sowie *Phlogophora jarmilae* **spec. nov.** (Sao Miguel) und von Fuerteventura (Kanarische Inseln) wird *Cleonymia baetica hoferi* **subspec. nov.** beschrieben. Erstmals werden faunistische Daten über Flores veröffentlicht und die ♀-Genitalien von *Phlogophora interrupta* (HAMPSON, 1908), *Phlogophora cabrali* PINKER, [1971] 1969 und *Phlogophora wollastoni* ([BETHUNE]-BAKER, 1891) abgebildet.

Introduction: The nine small islands of the Azores archipelago are divided into an eastern island group including Sao Miguel and Santa Maria, a central group embracing five islands situated close to each other, Graciosa, Terceira, Sao Jorge, Pico and Faial, and the remaining western pair named Flores and Corvo. All three groups are located some distance from each other, This being about 200 km between the eastern and central group, and about 250 km between the western and central group.

In August 2005, SALDAITIS and KRÜGER collected Lepidoptera for two weeks in all three parts of the Azores, in Sao Miguel, Faial, Pico and Flores Islands.

Due to the Gulf Stream, similar subtropical climatic conditions occur right across the Azores. Together with wet and windy weather, relatively cool summers with an average temperature of 23°C and warm winters with an average temperature of 13°C are the norm. Nevertheless, the ecological conditions on each island groups are different.

Eastern Sao Miguel is the most densely populated island, where urbanized habitats predominate. Its coastlines are covered with tropical gardens of banana and palm trees, whereas the central part is dominated by pastures, so is natural habitats are comparatively scarce. The steep slopes of extinct volcanoes are overgrown with trees and bushes [*Juniperus brevifolia* (Seub.), *Erica scoparia* L., *Ilex perado* Aiton ssp. *azorica* (Loes.), and *Prunus lusitanica* L.].

Central Faial and Pico Islands are less urbanised and have more natural habitats. Areas of medium altitude (500-700 m) abound in thick bushes and trees, whereas the highlands (1000

m), though rich in grass vegetation, are not intensively grazed by animals. Traces of the island's volcanic origin - lava and stone wastes - are commonplace.

Flores, the furthestmost island, has the smallest human population and is rich in natural habitats. The island is covered with dense grass, its highlands being carpeted with thick moss. The wild habitats are reminiscent of Palearctic tundra.

Specimens were collected via a Honda 350 watt petrol-driven electricity generator which lit a 160 watt mixed light bulb (tungsten and mercury vapour), and two 8 watt actinic light tubes connected to a car battery.

Phlogophora interrupta (HAMPSON, 1908) was originally described from Sao Jorge Island (in the middle of the Azores) and was collected on Faial Island, 17 km distant from the type locality. Our samples of *P. interrupta* (HAMP.) match their original description. Consequently, the specimens from Faial Island should be considered as typical *P. interrupta* (HAMP.).

Phlogophora jarmila **spec. nov.**

Type material: Holotype ♂, Azorean East, Sao Miguel Isl., lake Lagoa, Azul, 813 m, 1.-3. VIII.2005, leg. KRÜGER et SALDAITIS. In coll. University of Vilnius, Institute of Ecology. Paratype 7 ♂♂, 19 ♀♀, Azorean East, Sao Miguel Isl., lake Lagoa, Azul, 813 m, 1.-3. VIII. 2005, leg. KRÜGER et SALDAITIS. In coll. University of Vilnius, Institute of Ecology, A. E. RAU (Grafing nr. München, Germany), F. HOFER (Baden, Austria), H. BRANSTETTER (Winhöring, Germany), J. KRÜGER (Bilovec, Czech). 1 ♂, Azorean East, Sao Miguel Isl., Salto do Cavalo, 774 m, 2. VIII.2005, leg. KRÜGER et SALDAITIS. In coll. University of Vilnius, Institute of Ecology.

Description: The newly described species initially seems similar to *P. interrupta* (HAMP.), but is noticeably smaller and differs in other morphological characters. The length of the forewing is 20.5 mm in ♂♂ (n=2) and 19.1 in ♀♀ (min 18, max 20, moda 19, n=7), whereas in *P. interrupta* (HAMP.) the average forewing length is 22.6 mm in ♂♂ (min 22, max 24, moda 23, n=10) and 21.6 mm in ♀♀ (min 20, max 23, moda 21, n=10). The forewing in *P. jarmilae* **spec. nov.** (c.pl. 8, fig. 1-6, 8) is of pale cream-brown colour, whereas that in *P. interrupta* (HAMP.) (c.pl. 9, fig. 1-8) is dark brown with indistinct patterning. In *P. jarmilae* **spec. nov.**, the forewing pattern is conspicuous; the median spot is V-shaped and pronounced in all specimens, its base being more or less pointed, and in the majority of specimens the mark extends to the dorsal margin. The subterminal fascia is clear, light brown, and has a black line on the inner side (c.pl. 10, fig. 4). The forewing pattern is the same in both sexes. The median spot in *P. interrupta* (HAMP.) is U-shaped (c.pl. 10, fig. 3) and its base does not extend to the dorsal margin; the subterminal fascia is inconspicuous and blends with the forewing ground colour, and in some individuals it appears segmented.

♂ genitalia: Morphologically similar to those of *P. interrupta* (HAMP.) and *P. cabrali* PINK., but it clearly differs in the shape of the ampula. In *P. jarmilae* **spec. nov.**, the ampula is straight and abruptly enlarged, with 5 setae on the costal margin and 2 on the projections (Fig. 1). The costal margin of the ampula in *P. interrupta* (HAMP.) is curved, sickle-shaped (Fig. 2), it only enlarges gradually, and has just 4 setae. The costal margin of the ampula in *P. cabrali* PINK. is larger, straight, and bears 7 setae (Fig. 3).

♀ genitalia: The genital structure in the ♀♀ of the *Phlogophora* genus from the Azores and Canary Islands are similar. Morphological differences between the species studied are given below.

P. interrupta (HAMP.): The ductus bursae is sclerotised and wide from the base to the center (Fig. 4). The ductus seminalis and the ductus bursae branch from the common stem at the apex. The bursae is sac-shaped, with an elongated, plate-shaped signum.

P. jarmilae spec. nov. The ductus bursae is wider only in the center, the signum is markedly shorter, and the bursae is narrower (Fig. 5).

P. kruegeri spec. nov. The ductus bursae is almost of the same width throughout (Fig. 6).

P. cabrali PINK. (c.pl. 11, fig 1-4): The ductus bursae is narrower at the base and has two loops at the apex, one of which proceeds into the bursae and the other into the ductus seminalis (Fig. 7).

P. wollastoni ([BETHUNE]-BAKER): The bursae has a pocket-like dilation at the apex, and the length of the signum is the same as the bursae (Fig. 8).

P. jarmilae spec. nov. is morphologically similar to *P. interrupta* (HAMP.) but there are significant differences which are best illustrated in the ♂♂ antennae (Fig. 15). The projections on the left side of the antenna flagellum are distinctly longer than those on the right (Fig. 9). The projections are blunt and do not enlarge at the apex. The length of the undivided apical segments is noticeably larger than their width. The apex is not clearly pronounced. In contrast, in *P. interrupta* (HAMP.) the projections of the flagellum are obtuse, are almost the same length, and slightly widen towards the apex (Fig. 10). The width of the undivided segments is smaller than their length, and a prominent pointed projection is found on the margin of each segment.

The new species externally resembles *Phlogophora wollastoni* ([BETHUNE]-BAKER, 1891) which is endemic on Madeira Island (c.pl. 10, fig. 5; c.pl. 11, fig 5, 6, 8, 9), but its genital structure does differ.

The forewing pattern in *P. interrupta* (HAMP.) specimens collected by PINKER (Sao Miquel, Furnas, 1969) resembles that in typical specimens from the central part of the Azores but, judging from the ground colour, the size of the forewings (c.pl. 8, fig. 7), the antennae, and the genital structure, the former specimens are closer related to the newly described species of *P. jarmilae* spec. nov. The systematic status of the specimens collected by PINKER is therefore still uncertain.

Biology: The new species came to light between 11 pm to 3 am. but was uncommon.

Biotopes: Specimens of the new species were collected in the typical highland biotope on Sao Miguel Island, where pastures with scanty bushes and *Hortensia* sp. dominate (c.pl. 12, fig. 1).

Distribution: Only known from Sao Miguel Island, but the species probably also occurs on the neighbouring island of Santa Maria Island.

Etymology: The species is named after the name of JÜRGEN KRÜGER's wife JARMILA SPATINOVA (Bilovec, Czech).

***Phlogophora kruegeri* spec. nov.**

Type material: Holotype ♂, Azorean West, Flores Is., Caldeira Rasa, Marcela Mt., 721 m, 4.-8.VIII.2005, leg KRÜGER et SALDAITIS. In coll. University of Vilnius, Institute of Ecology. Paratypes 53 ♂♂ and 50 ♀♀ from the same locality as the holotype. In coll. University of Vilnius, Institute of Ecology, A. E. RAU (Grafing nr. München, Germany), F. HOFER (Baden, Austria), H. BRANSTETTER (Winhöring, Germany), J. KRÜGER (Bilovec, Czech).

The newly described species is smaller than *P. interrupta* (HAMP.), but slightly larger than *P. jarmilae* spec. nov. The length of the forewing is 21.1 mm in ♂♂ (min 20 mm, max 22 mm, moda 21 n= 10) and 20.7 mm in ♀♀ (min 20 mm, max 22, moda 21, n=10). In *P. kruegeri* spec. nov., the colour of the forewing is mid brown (c.pl. 13, fig. 1-8), whereas in *P. interrupta* (HAMP.) it is dark brown. The forewing pattern is very noticeable, while that in *P. interrupta* (HAMP.) is usually inconspicuous. The median spot is always prominent, of an irregular V-shape, basally more or less obtuse at the base and interrupted at the dorsal margin. Most specimens have a teardrop-shaped spot at the margin of the dorsum. The median spot in *P. interrupta* (HAMP.) is U-shaped, is also interrupted at the dorsum, and bears a small rectangular spot; there is also an additional small but clearly visible spot which is usually located on the dorsal vein. The basal margin of the discal spot in the new species is unusually long, while the orbicular spot has a noticeable notch at the base. These characters distinguish *P. kruegeri* (c.pl. 10, fig. 2) from the other two species. The orbicular spot both in *P. interrupta* (HAMP.) and *P. jarmilae* spec. nov. (c.pl. 10, fig. 3, 4) is oval and has no interrupting notch. The subterminal fascia in *P. kruegeri* spec. nov. ♂♂ is distinct and serrated, but the forewing pattern in both sexes does not differ.

♂ genitalia: Morphologically similar to *P. interrupta* (HAMP.), but clearly different in the shape of the ampula (Fig. 11). The ampula has a curved ventral margin which contains 6 setae. The costal margin contains 2 setae located on a large process, the remaining 4 setae being aligned in the ampula. The costal margin of the ampula in *P. interrupta* (HAMP.) is curved and sickle-shaped (Fig. 2), it only gradually widens, and has 4 setae.

♀ genitalia: Morphologically similar to *P. interrupta* (HAMP.) but there are differences which are best reflected in the antennae (Fig. 15). The antenna flagellum are obtuse and expand towards the apex, the examples on the left-hand sided being markedly longer than those on the right. The undivided apical segments are quadrangular, with no apical process (Fig. 12). In *P. interrupta* (HAMP.) these segments are blunt, of almost equal length, and slightly widen at the apex. The undivided segments are smaller in width than in their length, and have a clearly pronounced apical process.

Biology: Individuals of the new species were numerous and came readily to light from 11 pm to 3 am. Moths of the *Phlogophora* genus have not previously recorded from Flores Island.

Biotopes: Specimens of the new subspecies were collected from a typical highland biotope on Flores Island, in wet habitats covered with grass and moss (c.pl. 12, fig. 2).

Distribution: Known only from Flores, but the species probably occurs on the neighbouring island of Corvo.

Etymology: The species is named after JÜRGEN KRÜGER (Bilovec, Czech), the authors' good friend and companion, and member of the expedition to the Azores.

Checklist of Noctuidae species collected together with the new species on Flores Island

Mesapamea (*Mesapamea*) *storai* (REBEL, 1938)

Mythimna (*Pseudaletia*) *unipuncta* (HAWORTH, 1809)

Noctua pronuba (LINNAEUS, 1758)

Noctua atlantica (WARREN, 1909)

Noctua carvalhoi (PINKER, 1983: Plate IV, fig. 7)

Xestia (*Megasema*) *c-nigrum* (LINNAEUS, 1758)

Phlogophora kruegeri (SALDAITIS & IVINSKIS, 2006)

Phlogophora meticulosa (LINNAEUS, 1758)

Thysanoplusia (*Thysanoplusia*) *orichalcea* (FABRICIUS, 1775)

Chrysodeixis (*Chrysodeixis*) *chalcites* (ESPER, [1789])

Ctenoplusia (*Ctenoplusia*) *limbirena* (GUENÉE, 1852)

Autographa gamma (LINNAEUS, 1758)

***Cleonymia baetica hoferi* subsp. nov.**

Cleonymia baetica (RAMBUR, 1837) is represented by distinct geographical races within its more or less continuous range (c.pl. 11a, fig. 9, 10). The nominal typical subspecies occurs in E Portugal, Spain, S. France, N. Caucasus.

C. baetica sardoa TURATI, 1911 occurs in Sardinia, Sicily and Corsica.

C. baetica diluta (ROTHSCHILD, 1911) is found in Morocco, Algeria, Tunis and Libya.

C. baetica klapperichi HACKER, 2001 occurs in SE Turkey, Iraq, SW Iran, Syria, Jordan, Israel, Saudi Arabia and E. Africa (c.pl. 11a, fig. 8, 11, 12).

In our analysis the specimens of *C. baetica klapperichi* HACKER from Turkey and Iran did not externally differ from those of *C. baetica diluta* (ROTHSCHILD), which makes the identification of a new subspecies rather doubtful.

Cleonymia baetica (RMB.) was described from the Canary archipelago - specifically from Fuerteventura Island - in a number of studies (HACKER & SCHMITZ, 1996; HACKER, 2001; BAEZ, 1998). According to BEHOUNEK (pers. comm.), specimens from Fuerteventura should be assigned to *C. baetica diluta* (ROTHSCHILD, 1911), which occurs in S. Africa, and also in Morocco which is situated close-by. Nevertheless, the specimens collected by HOFER from Fuerteventura obviously differ from *C. baetica diluta* (ROTHSCHILD) in their external appearance and genital structure, which allows the identification of a new subspecies, here described.

Type material: Holotype ♂, Fuerteventura, Jandia, 19.I.-2.II.2002, leg. HOFER. In coll. University of Vilnius, Institute of Ecology.

Paratypes 3 ♂♂ and 4 ♀♀, same data as the holotype. In coll. University of Vilnius, Institute of Ecology and in coll. F. HOFER (Baden, Austria).

The newly described subspecies is externally similar to the typical subspecies. The forewing length is 12.1 mm in ♂♂ and 13.1 mm in ♀♀. Judging from the wing pattern it resembles the

nomino-typical and *C. baetica diluta* (ROTHSCH.) (c.pl. 11a, fig. 5, 6) subspecies, but differs by having darker forewings and hindwings. In *C. baetica hoferi* **subspec. nov.** (c.pl. 11a, fig. 1-4) the forewing pattern is more distinct than in *C. baetica diluta* (ROTHSCH.), and the ground colour and antennae are blackish grey, whereas those in *C. baetica diluta* (ROTHSCH.) are of a brown grey. The contrasts in the forewing pattern means the new subspecies is similar to the nominative subspecies. The forewing pattern in both sexes is the same.

C. baetica hoferi **subspec. nov.** is visibly very close to *C. baetica sardoa* TURATI, 1911, which is distributed in Sardinia, Sicily and Corsica, and was illustrated by RONKAY & RONKAY (1995) in their study. This suggests that its representatives from isolated island populations are darker than those of mainland populations. BAEZ (1998) published a photo of *C. baetica* (RMB.) but without details of its capture. The date of publication coincided with the appearance of *C. baetica diluta* (ROTHSCH.) from N. Africa. As a result, the authors excluded the possibility that the specimen recorded was found on the Canary Islands.

♂ genitalia: The genitalia of the new subspecies has the characteristic structure of *C. baetica* (RMB.) (Fig. 13). In *C. baetica hoferi* **subspec. nov.**, the costal margin of the valva is rounded and narrows towards the apex, the clasper is of the usual mushroom shape with a large head, the juxta is heart-shaped, and the aedeagus vesica only contains a few spines. In *C. baetica baetica* (RMB.) and *C. baetica diluta* (ROTHSCH.), the costal margin of the valva is less rounded, the valva is slightly tapers, the clasper enlarges at the apex but does not form a well-developed cap, and the plates of the aedeagus vesica are of a different shape. The genital structure of *C. baetica hoferi* **subspec. nov.** is closest to that of *C. baetica sardoa* TURATI.

♀ genitalia: The genitalia of the new subspecies differs from those of the nomino-typical subspecies by the shape of the ductus bursae, which has a prominent enlargement. One third of the bursa is narrower, whereas the remaining part is markedly nipped (Fig. 14).

Biology: The new subspecies was caught at a street light by the edge of the village Jandia at about 8 o'clock in the evening. There was a valley with a dried up river bed and a sparsely vegetated sandy waste near the collection site. At the time of capture, the weather was warm (about 20°C) and windy. According to BAEZ (1998), the flight period of *C. baetica hoferi* **subspec. nov.** on Fuerteventura Island is from February to April and again during October. Caterpillars feed on *Helianthemum* (Cistaceae) plants. We assume that the biology of the new subspecies will be close to that of related *C. baetica baetica* (RMB.) and *C. baetica diluta* (ROTHSCH.).

Distribution: Known only from Fuerteventura Island in the Canary Island group.

Etymology: The new subspecies is described on behalf of FRANZ HOFER (Baden, Austria). He is a recognised expert on the Noctuidae and owns a huge moth collection. For many years FRANZ HOFER has studied moths on the Canary Islands and noticed that the *Cleonymia baetica* population is distinct from that on Fuerteventura Island.

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Colour plate 8, p. 288

- 1: *Phlogophora jarmilae* **spec. nov.**, Paratype ♂, Azorean East, Sao Miguel Isl., lake Lagoa, Azul, 813 m, 1.-3.VIII.2005, leg. KRÜGER & SALDAITIS.
- 2, 4, 6, 8: *Phlogophora jarmilae* **spec. nov.**, Paratype ♀, Azorean East, Sao Miguel Isl., lake Lagoa, Azul, 813 m, 1.-3.VIII.2005, leg. KRÜGER & SALDAITIS.
- 3: *Phlogophora jarmilae* **spec. nov.**, Paratype ♂, Azorean East, Sao Miguel Isl., Salto do Cavalo, 774 m, 2.VIII.2005, leg. KRÜGER & SALDAITIS.
- 5: *Phlogophora jarmilae* **spec. nov.**, Holotype ♂, Azorean East, Sao Miguel Isl., lake Lagoa, Azul, 813 m, 1.-3.VIII.2005, leg. KRÜGER & SALDAITIS.
- 7: *Phlogophora* **spec. ?**, Acores, St. Miguel, Furnas. V. [19] 69 leg. PINKER.

Colour plate 9, p. 289

- 1-8: *Phlogophora interrupta* (HAMPSON, 1908), Azorean central, Faial Isl., Caldeira near Cabeco Verde, 678 m, 10.VIII.2005, leg. KRÜGER & SALDAITIS. 1, 3, 5, 7: ♂. 2, 4, 6, 8: ♀.

Colour plate 10, p. 290

Wing pattern of *Phlogophora* sp.

1: *Phlogophora cabrali* PINKER, [1971] 1969 ♀, Azorean East, Sao Miguel Isl., lake Lagoa,

3: *Phlogophora interrupta* (HAMPSON, 1908). 4: *Phlogophora jarmilae* **spec. n**

5: *Phlogophora wollastoni* ([BETHUNE]-BAKER, 1891)

Colour plate 11, p. 292

1: *Phlogophora cabrali* PINKER, [1971] 1969 ♀, Azorean East, Sao Miguel Isl., lake Lagoa, Azul, 813 m, 1.-3.VIII.2005, leg. KRÜGER & SALDAITIS.

2: *Phlogophora cabrali* PINKER, [1971] 1969 ♀, Azorean central. Faial Isl., Caldeira near Cabeco Verde, 678 m, 10.VIII.2005, leg. KRÜGER & SALDAITIS.

3: *Phlogophora cabrali* PINKER, [1971] 1969 ♂, Azorean central. Faial Isl., Caldeira near Cabeco Verde, 678 m, 10.VIII.2005, leg. KRÜGER & SALDAITIS.

4: *Phlogophora cabrali* PINKER, [1971] 1969 ♂, Azorean East, Sao Miguel Isl., lake Lagoa, Azul, 813 m, 1.-3.VIII.2005, leg. KRÜGER & SALDAITIS.

5, 6: *Phlogophora wollastoni* ([BETHUNE]-BAKER, 1891) ♀, Madeira, Boca da, Encumeada loc., 1300 m, 10.XI.2004, leg. KRÜGER & SALDAITIS.

7: *Noctua carvalhoi* ([BETHUNE]-BAKER, 1891) ♂, Azorean West, Flores Is. Caldeira Rasa, Marcela Mt., 721 m, 4.-8.VIII.2005, leg. KRÜGER & SALDAITIS

8, 9: *Phlogophora wollastoni* ([BETHUNE]-BAKER, 1891) ♀, Madeira, Boca da, Encumeada loc., 1300 m, 10.XI.2004, leg. KRÜGER & SALDAITIS.

Colour plate 11a, p. 292

1-4: *Cleonymia baetica hoferi* **subspec. nov.**, Fuerteventura, Jandia, 19.I.-2.II.2002. leg. HOFER.

1, 2: Paratype ♀. 3: Paratype ♂. 4: Holotype ♂

5: *Cleonymia baetica diluta* ♂ Marokko, MA. Souk-El-Had. 1000-1200 m., 1-15.IV.1998, leg. TARRIER. 6, 7: *Cleonymia baetica diluta*. (ROTHSCHILD, 1911)

6: ♂, Marokko, A. A. O. E. Tepraoute, Tizi Mlil, 1400 m, 13.IV.1994.

7: ♂, Marokko, Aflor, Taliouine, 1500 m, 22.IV.[19] 99.

8: *Cleonymia baetica klapperichi* HACKER, 2001 ♂, Turkey, Prov. Urfa, Halfeti, valle of Euphrat, 500 m, 37° 52,5'E, 37° 14,5'N, 15-18. IV.1990. leg. B. HERZCIG & G RONKAY.

9: *Cleonymia baetica baetica* (RAMBUR, 1837) ♂, Valcuerna, 300 m, 3.IV.[19]98. Huesca. Espag. 10: *Cleonymia baetica baetica* (RAMBUR, 1837) ♂, Spain, Granada, Sierra Nevada, 1600 m., Puerto de la Ragua 5 km. NW, 29.5.2000. T. NUPPONEN leg.

11: *Cleonymia baetica klapperichi* HACKER, 2001 ♀, Iran, Prov. Fars, Saidatsahr, 1800 m, 2004.IV.10. leg. BENEDEK, HACZ & MAROSI. 12: *Cleonymia baetica klapperichi* HACKER, 2001 ♂, Iran, prov. Fars, 30 km NW of Ghir, 11. IV. 2004, leg. B. BENEDEK, T. HACZ & P. MAROSI.

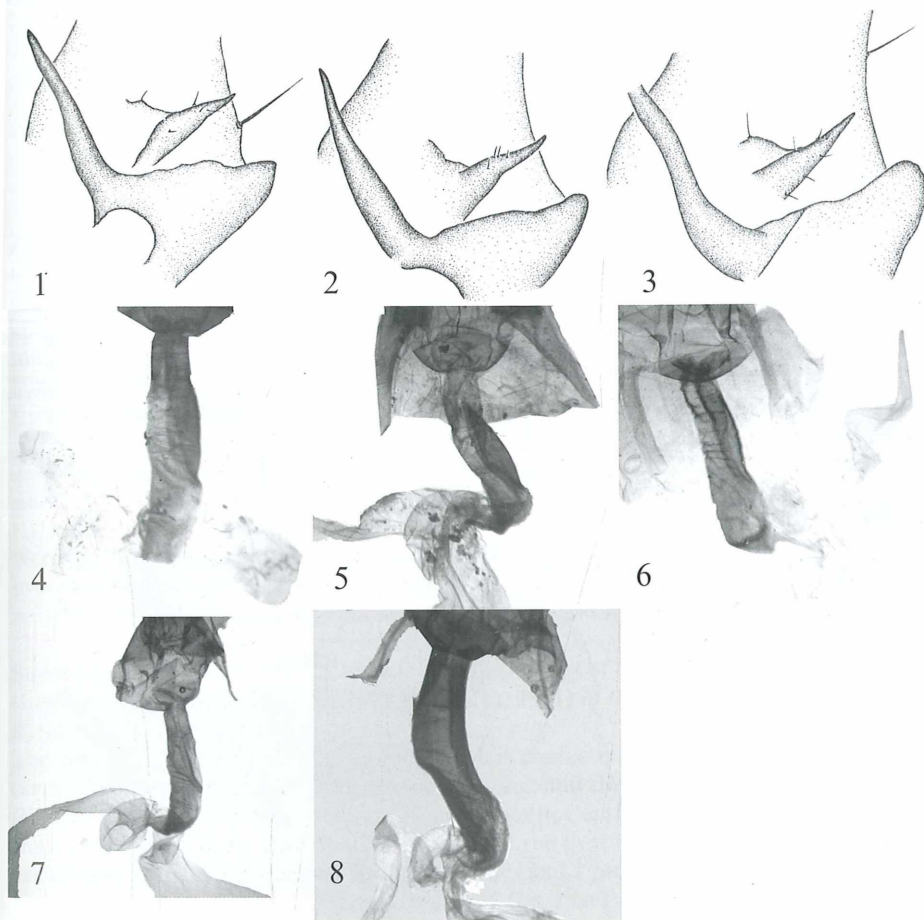
Colour plate 12, p. 293

1: *Phlogophora jarmilae* **spec. nov.** type locality: Azorean East, Sao Miguel Isl., lake Lagoa, Azul, 813 m. 2: *Phlogophora kruegeri* **spec. nov.** type locality: Azorean West, Caldeira Rasa, Marcela Mt., 721 m.

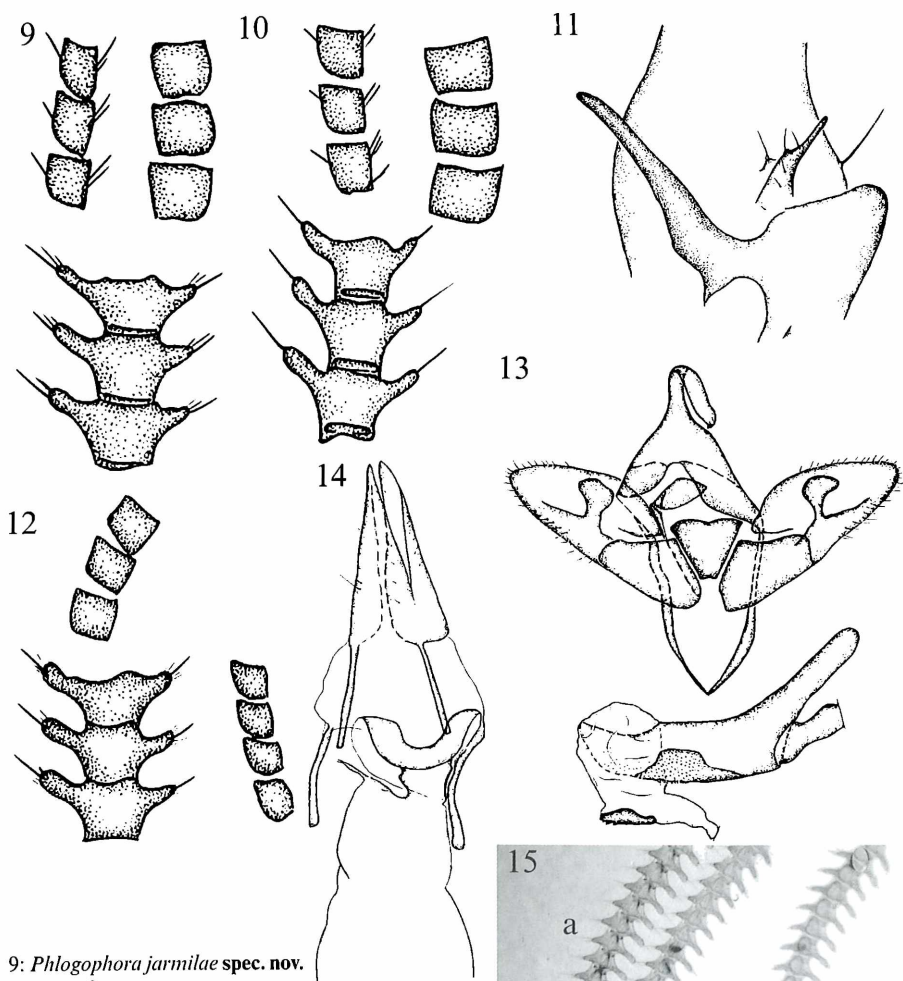
Colour plate 13, p. 294

1-8: *Phlogophora kruegeri* **spec. nov.**, Azorean West, Caldeira Rasa, Marcela Mt., 721 m, 4.-8.VIII.2005, leg. KRÜGER & SALDAITIS.

1: Holotype ♂. 3, 5, 7: Paratype ♂. 2, 4, 6, 8: Paratype ♀.



- 1: *Phlogophora jarmilae* **spec. nov.** ♂ genitalia fragment of valva
- 2: *Phlogophora interrupta* (HAMPSON, 1908) ♂ genitalia fragment of valva
- 3: *Phlogophora cabrali* PINKER, [1971] 1969 ♂ genitalia fragment of valva
- 4: *Phlogophora interrupta* (HAMPSON, 1908) ♀ genitalia fragment
- 5: *Phlogophora jarmilae* **spec. nov.** ♀ genitalia fragment
- 6: *Phlogophora kruegeri* **spec. nov.** ♀ genitalia fragment
- 7: *Phlogophora cabrali* PINKER, [1971] 1969 ♀ genitalia fragment
- 8: *Phlogophora wollostoni* ♀ genitalia fragment



9: *Phlogophora jarmilae* **spec. nov.**
antenna fragment

10: *Phlogophora interrupta*
(HAMPSON, 1908) antenna
fragment

11: *Phlogophora kruegeri* **spec.**
nov. ♂ genitalia fragment

12: *Phlogophora kruegeri* **spec.**
nov. antenna fragment

13: *Cleonymia baetica hoferi* ♂ genitalia; a- ♂ genitalia without aedeagus, b- Aedeagus

14: *Cleonymia baetica hoferi* **subspec. nov.** ♀ genitalia

15: *Phlogophora* sp. antennae: a- *P. interrupta* (HAMPSON, 1908), b- *P. jarmilae* **spec. nov.**, c- *P. kruegeri*
spec. nov.

Colour plate 2/ Farbtafel 2 (p. 281)

GIL-T., F.: *Cupido carswelli* (STEMPFER, 1927): Morphology of its chrysalis and genitalia compared with those of *Cupido minimus* (FUESSLY, 1775) and *Cupido lorquinii* (HERRICH-SCHÄFFER, 1847) (Lepidoptera, Lycaenidae). - Atalanta (2006) 37 (1/2):150-160, Würzburg.

Fig. 8. Chrysalis of *Cupido minimus* (FUESSLY, 1775).

Fig. 9. Chrysalis of *Cupido lorquinii* (HERRICH-SCHÄFFER, 1847): ventral view.

Fig. 10. Chrysalis of *Cupido lorquinii* (HERRICH-SCHÄFFER, 1847): dorsal view.

Fig. 11. Chrysalids of *Cupido lorquinii* (HERRICH-SCHÄFFER, 1847).

Fig. 12. Chrysalids of *Cupido carswelli* (STEMPFER, 1927): dorsal view.

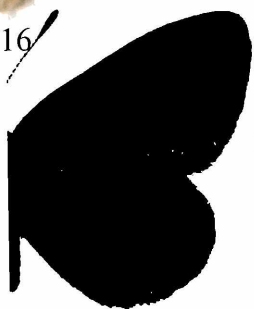
Fig. 13. Chrysalids of *Cupido carswelli* (STEMPFER, 1927): ventral view.

Fig. 14. Chrysalids of *Cupido carswelli* (STEMPFER, 1927): lateral view.

Fig. 15. Imago ♂ of *Cupido carswelli* (STEMPFER, 1927).

Fig. 16. Imagines ♂♂ of *C. carswelli* (STEMPFER, 1927) (left) and *C. minimus* (FUESSLY, 1775) (right). Fig. 17. Imago of *C. carswelli* (STEMPFER, 1927) on *Anthyllis vulneraria*, larval host-plant.

Colour plate 2/ Farbtafel 2



Colour plate 3/ Farbtafel 3 (p.282)

HUANG, H. & K. SONG: New or little known elfin lycaenids from Shaanxi, China (Lepidoptera: Lycaenidae). - Atalanta (August 2006) 37 (1/2): 261-167, Würzburg

Fig. 1: *Ahlbergia luoliangi* **spec.nov.** Holotype ♂ upperside (♂ brand outlined in white on left forewing).

Fig. 2: *Ahlbergia luoliangi* **spec. nov.** Holotype ♂ underside.

Fig. 3: *Ahlbergia luoliangi* **spec.nov.** Paratype ♀ upperside (left half) and underside (right half).

Fig.4: *Ahlbergia leei* JOHNSON, 1992 ♀ (Chang-an, Shaanxi) upperside (left half, with ♀ brand outlined in white) and underside (right half).

Fig. 5: *Ahlbergia leei* JOHNSON, 1992, ♀(Chang-an, Shaanxi) upperside (left half) and underside (right half).

Fig. 6: *Ahlbergia hsui* JOHNSON, 2000, ♂ (Xing-long-sfan, S. Gansu) upperside (left half) and underside (right half).

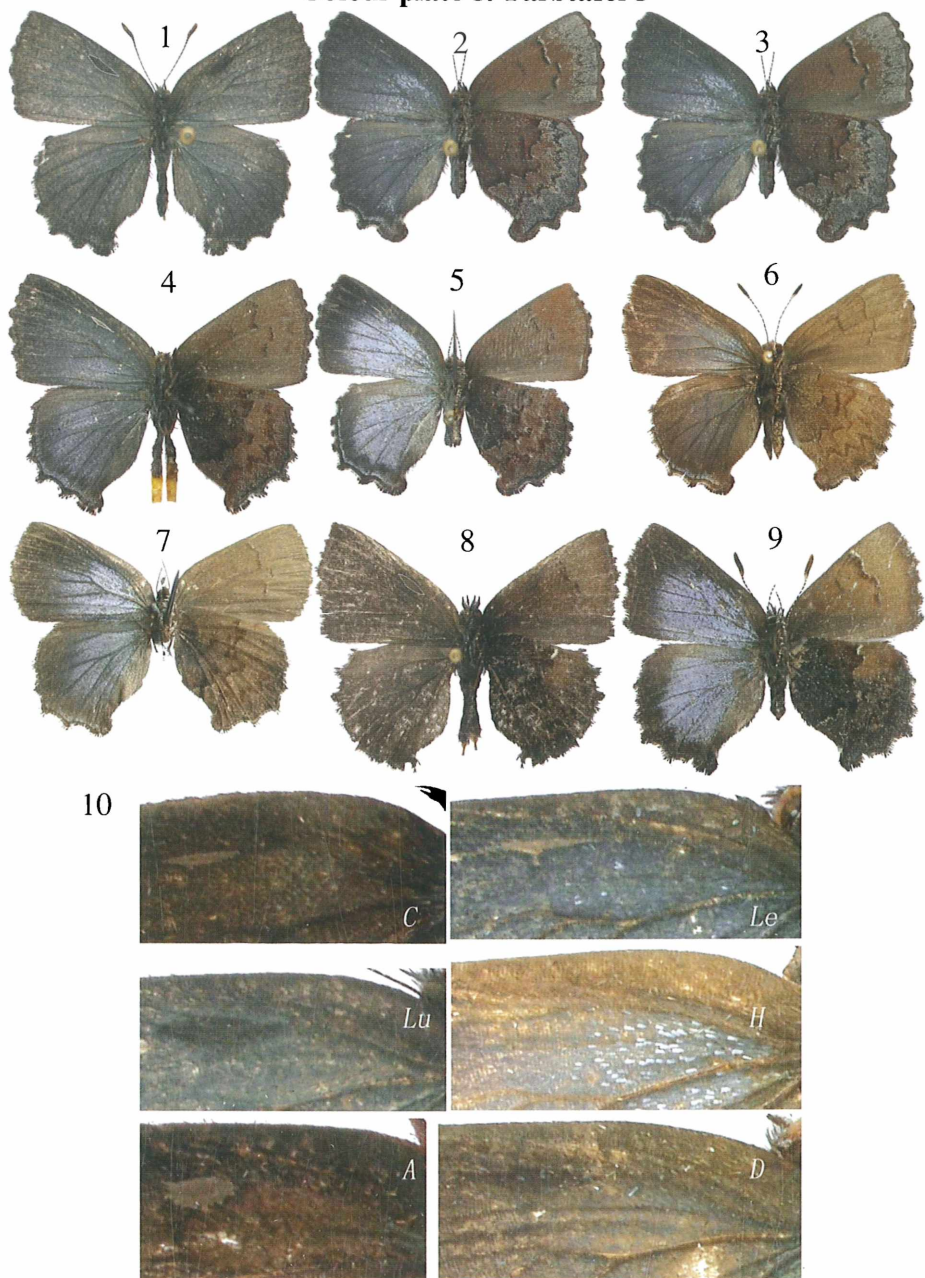
Fig. 7: *Ahlbergia hsui* JOHNSON, 2000, Holotype ♂ (Kang-xian, S. Gansu, deposited in IZAS) upperside (left half) and underside (right half).

Fig. 8: *Novosatsuma collosa* JOHNSON, 1992, ♂ (Chang-an, Shaanxi) upperside (left half, with ♂ brand outlined in white) and underside (right half).

Fig. 9: *Novosatsuma collosa* JOHNSON, 1992, ♂ (Chang-an, Shaanxi) upperside (left half) and underside (right half).

Fig. 10: Costal area of forewing showing ♂ brand. C: *A. clarofacia* JOHNSON; Le: *A. leei* JOHNSON, 1992; Lu: *A. luoliangi* **spec.nov.**; H: *A. hsui* JOHNSON, 2000; A: *Cissatsuma albilinea* (RILEY, 1939); D: *A. dongyui* HUANG & ZHAN, 2006.

Colour plate 3/ Farbtafel 3



Colour plate 4/ Farbtafel 4

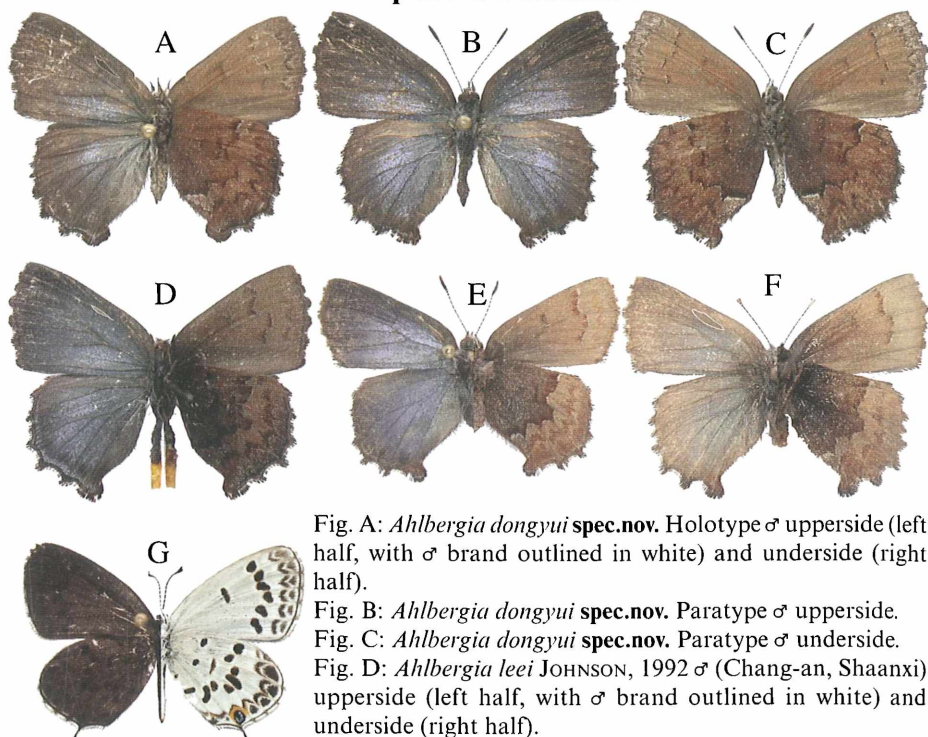


Fig. A: *Ahlbergia dongyui* **spec.nov.** Holotype ♂ upperside (left half, with ♂ brand outlined in white) and underside (right half).

Fig. B: *Ahlbergia dongyui* **spec.nov.** Paratype ♂ upperside.

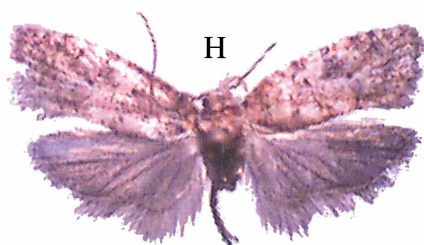
Fig. C: *Ahlbergia dongyui* **spec.nov.** Paratype ♂ underside.

Fig. D: *Ahlbergia lee* JOHNSON, 1992 ♂ (Chang-an, Shaanxi) upperside (left half, with ♂ brand outlined in white) and underside (right half).

Fig. E: *Ahlbergia confusa* **spec.nov.** Holotype ♀ upperside (left half) and underside (right half).

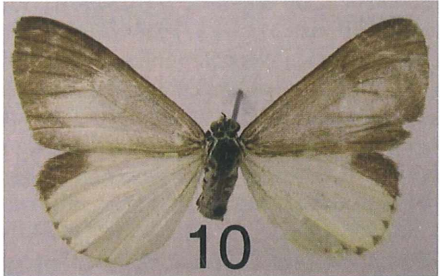
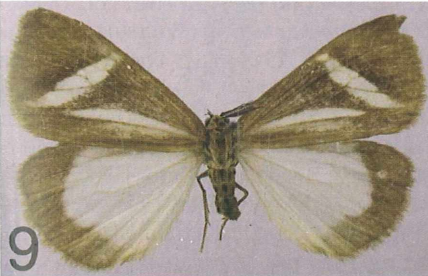
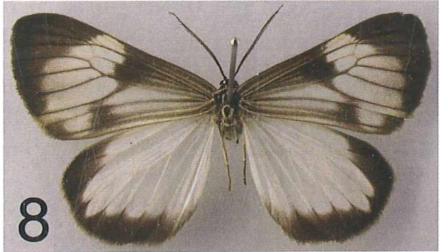
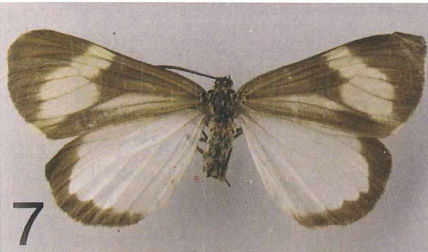
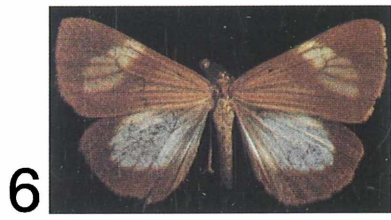
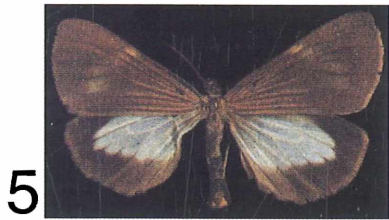
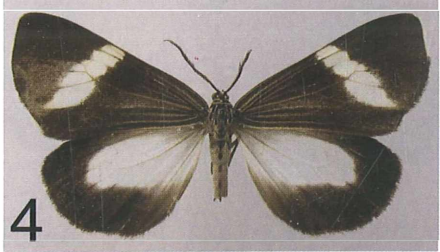
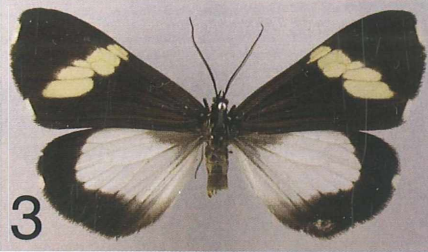
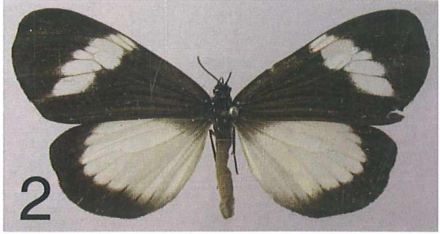
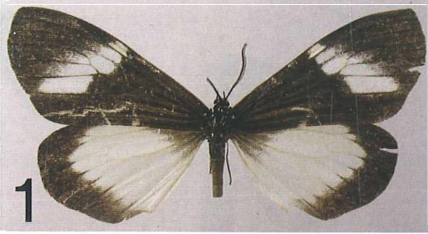
Fig. F: *Ahlbergia confusa* **spec.nov.** Paratype ♂ upperside (left half, with brand outlined in white) and underside (right half).

Fig. G: *Tongia dongchuanensis* **spec.nov.**, Holotype ♂ upperside (left half) and underside (right half).



Agonopterix ferocella (CHRÉTIEN, 1910)

Colour plate 5/ Farbtafel 5



Colour plate 6/ Farbtafel 6

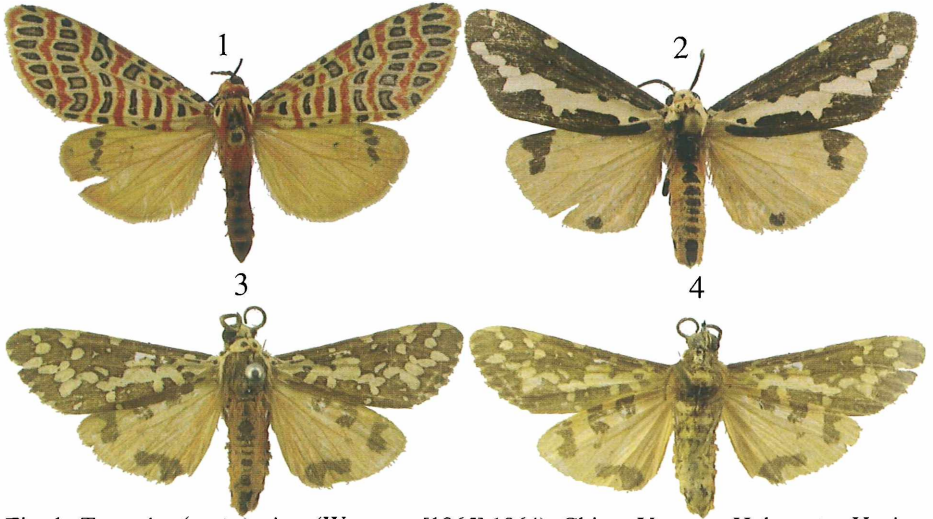


Fig. 1: *Tatargina* (s. str.) *picta* (WALKER, [1865] 1864), China, Yunnan, Haba mts., Hutiao vill., h=2100 m, 21-26.VI.1996, S. MURZIN leg.

Fig. 2: *Tatargina* (*Hindargina*) *pannosa* (MOORE, 1879), Nepal, Mahakali, Banku, 660 m, 20.VI.1995, anonymous leg.

Fig. 3-4. *Tatargina* (*Hindargina*) *sipahi* (MOORE, 1872), lectotype, India, Bombay, upperside (3) and underside (4).

Colour plate 5/ Farbtafel 5 (p. 285)

Atalanta (September 2006) 37 (1/2): 284-285, Würzburg, ISSN 0171-0079

DUBATOLOV, V. V.: On the generic status of the Afrotropical *Nyctemera* species (Lepidoptera, Arctiidae). - Atalanta (August 2006) 37 (1/2): 191-205, Würzburg.

Fig. 1: *Podomachla antinorii* (OBERTHÜR, 1880), ♂, Tanzania, 5 km S from Bukoba, Forest Kibira, 1.VI.1912, TROITSKII leg. (ZIN).

Fig. 2: *Podomachla antinorii* (OBERTHÜR, 1880), ♀, Cameroun, Bitye Ja River, 2000 ft, X-XI.1910 (MMUM). **Fig. 3:** *Podomachla apicalis* (WALKER, 1854), ♂, South Africa, Natal, Weenen, coll. by G.H. BURN (MMUM). **Fig. 4:** *Chiromachla restricta* (BUTLER, 1894), ♂, Kenya, Kibwezi, 31.VII.1917 (MMUM). **Fig. 5:** *Chiromachla torbeni* (WILTSHIRE, 1983), ♂, holotype, Yemen Arab Republic (N Yemen): Wadi Dhabab, 19.X.1981, TORBEN B. LARSEN leg., from: WILTSHIRE (1983). **Fig. 6:** *Chiromachla torbeni* (WALKER, 1983), ♀, allotype. Yemen Arab Republic (N Yemen): Wadi Annah, 1400 m, 22.V.1980, TORBEN B. LARSEN leg., from: WILTSHIRE (1983). **Fig. 7:** *Chiromachla insulare* (BOISDUVAL, 1833), ♂, [Madagascar], without label (MMUM). **Fig. 8:** *Chiromachla perspicua* (WALKER, 1854), ♂, without label, probably from West Africa (MMUM). **Fig. 9:** *Afronyctemera itokina* (AURIVILLIUS, 1904), ♂, Rwanda, Butare, XII.1976, A. POPOUDINA leg. (SZMN). **Fig. 10:** *Xylecata hemixantha* (AURIVILLIUS, 1904), ♂, Rwanda, Butare, I.1977, A. POPOUDINA leg. (SZMN).

Colour plate 7/ Farbtafel 7

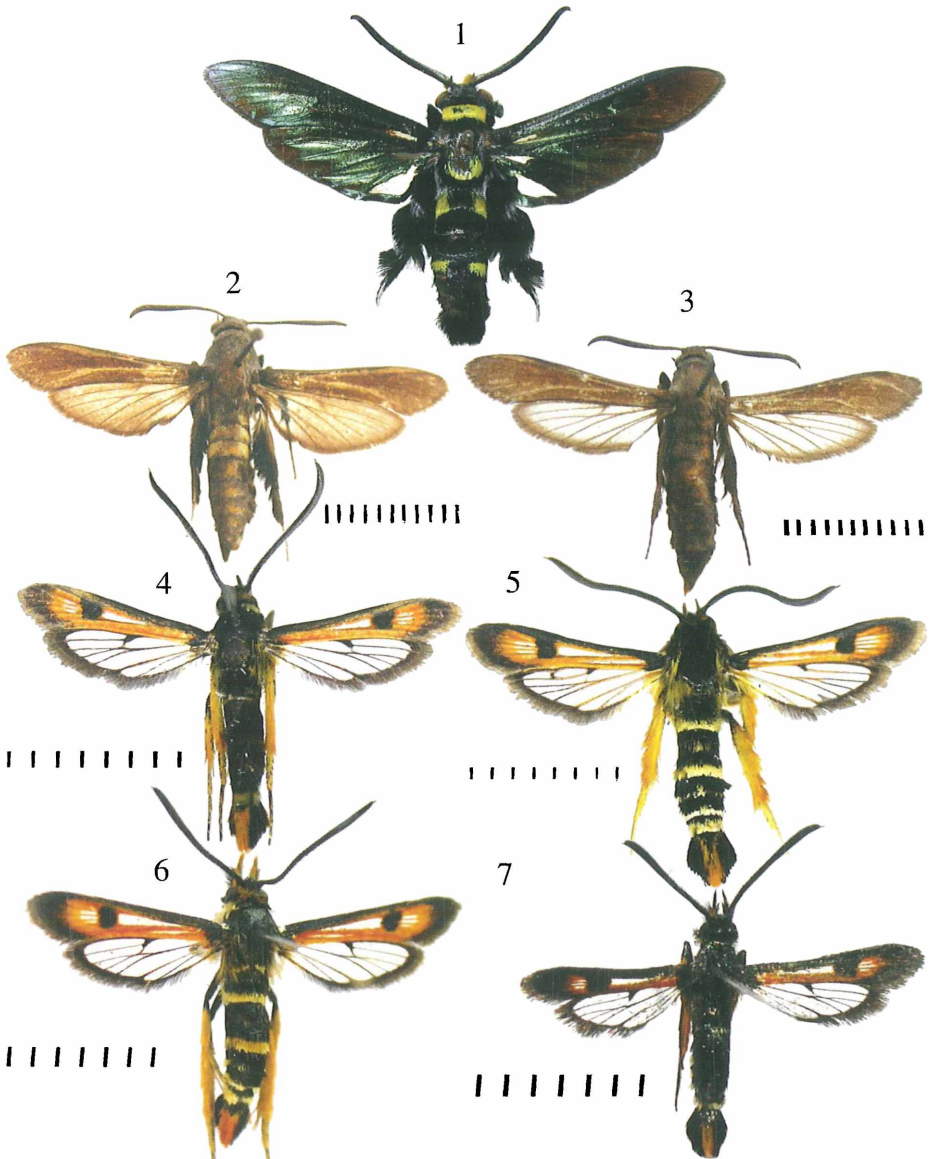


Fig.1: *Trilochana oberthüri* LE CERF, 1917, Malaysia, Cameron Highlands, 330m, N 4°18'2", E 101°19'39", 19.3.-3.4.2005, leg. T. & M. STROHLE. Fig. 2: *Afrokona aerea* gen. et spec. nov., Holotype ♂, Musée du Congo, Kafakumba, IX. 1933, leg. G. F. OVERLAET. Fig. 3: *Afrokona aerea* gen. et spec. nov., Paratype ♀, Musée du Congo, Kafakumba, IX. 1933, leg. G. F. OVERLAET. Abb. 4-7: *Pyropteron minianiforme minianiforme* (FREYER, 1843) Abb. 4: Griechenland, Insel Kreta, Agios Mamas 06.06.2005, 420m, N 35°19', E 24°46', leg. LEWANDOWSKI. Abb. 5: Griechenland, Insel Lesbos, östlicher Inselteil, Umg. Plomari, 28.05.2005, 120m, leg. S. & H. FISCHER. Abb. 6: Griechenland, Peloponnes, Provinz Achaia, Kalavrita, 750m, 17.-22.08.1998, leg. H. ARHEILGER. Abb. 7: Griechenland, Insel Kreta, Ida Gebirge, Ideon Andron 06.06.2005, 1540m, N 35°12', E 24°50', leg. LEWANDOWSKI.

Colour plate 8/ Farbtafel 8



1: *Phlogophora jarmilae* **spec. nov.**, Paratype ♂, Azorean East, Sao Miguel Isl., lake Lagoa, Azul, 813 m, 1.-3.VIII.2005, leg. KRÜGER & SALDAITIS.

2, 4, 6, 8: *Phlogophora jarmilae* **spec. nov.**, Paratype ♀, Azorean East, Sao Miguel Isl., lake Lagoa, Azul, 813 m, 1.-3.VIII.2005, leg. KRÜGER & SALDAITIS.

3: *Phlogophora jarmilae* **spec. nov.**, Paratype ♂, Azorean East, Sao Miguel Isl., Salto do Cavalo, 774 m, 2.VIII.2005, leg. KRÜGER & SALDAITIS.

5: *Phlogophora jarmilae* **spec. nov.**, Holotype ♂, Azorean East, Sao Miguel Isl., lake Lagoa, Azul, 813 m, 1.-3.VIII.2005, leg. KRÜGER & SALDAITIS.

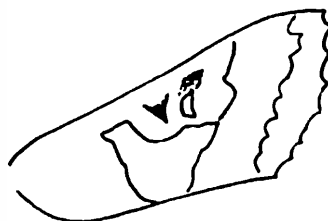
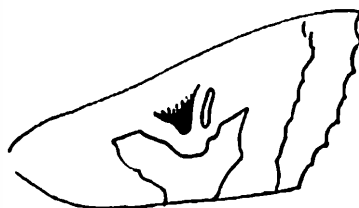
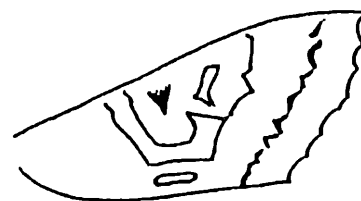
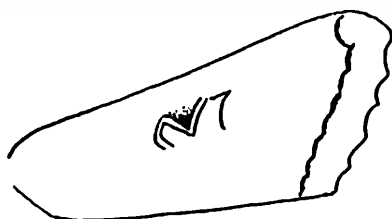
7: *Phlogophora* **spec. ?**, Acores, St. Miguel, Furnas. V. [19] 69 leg. PINKER.

Colour plate 9/ Farbtafel 9



1-8: *Phlogophora interrupta* (HAMPSON, 1908), Azorean central, Faial Isl., Caldeira near Cabeco Verde, 678 m, 10.VIII.2005, leg. KRÜGER & SALDAITIS. 1, 3, 5, 7: ♂. 2, 4, 6, 8: ♀.

Colour plate 10/ Farbtafel 10



Wing pattern of *Phlogophora* sp.

1: *Phlogophora cabrali* PINKER, [1971] 1969

2: *Phlogophora kruegeri* **spec. nov.**

3: *Phlogophora interrupta* (HAMPSON, 1908)

4: *Phlogophora jarmilae* **spec. nov.**

5: *Phlogophora wollastoni* ([BETHUNE]-BAKER, 1891)

Colour plate 11/ Farbtafel 11 (p. 292)

SALDAITIS, A. & P. IVINSKIS: Three new Noctuidae taxa from the Macaronesian archipelago (Lepidoptera). - Atalanta (August 2006) 37 (1/2): 245-254, Würzburg.

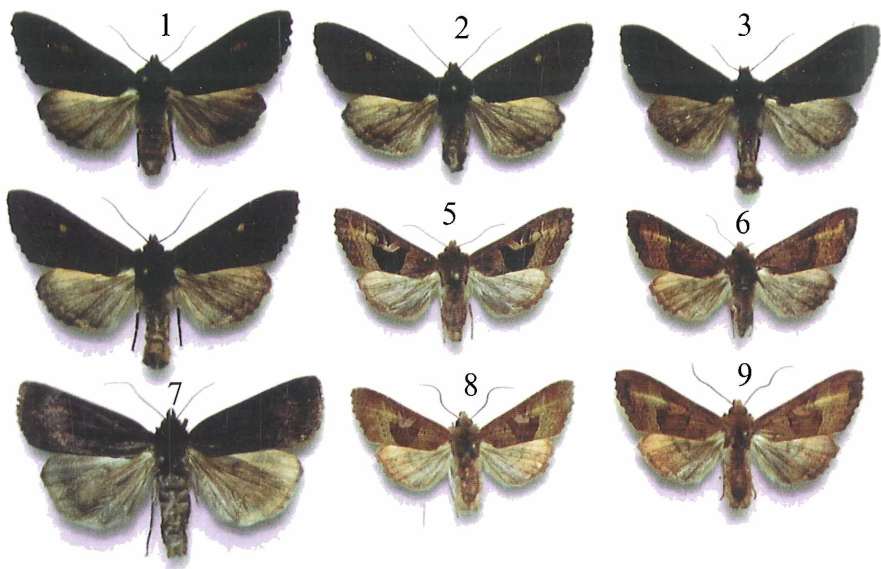
- 1: *Phlogophora cabrali* PINKER, [1971] 1969 ♀, Azorean East, Sao Miguel Isl., lake Lagoa, Azul, 813 m, 1.-3.VIII.2005, leg. KRÜGER & SALDAITIS.
- 2: *Phlogophora cabrali* PINKER, [1971] 1969 ♀, Azorean central. Faial Isl., Caldeira near Cabeco Verde, 678 m, 10.VIII.2005, leg. KRÜGER & SALDAITIS.
- 3: *Phlogophora cabrali* PINKER, [1971] 1969 ♂, Azorean central. Faial Isl., Caldeira near Cabeco Verde, 678 m, 10.VIII.2005, leg. KRÜGER & SALDAITIS.
- 4: *Phlogophora cabrali* PINKER, [1971] 1969 ♂, Azorean East, Sao Miguel Isl., lake Lagoa, Azul, 813 m, 1.-3.VIII.2005, leg. KRÜGER & SALDAITIS.
- 5, 6: *Phlogophora wollastoni* ([BETHUNE]-BAKER, 1891) ♀, Madeira, Boca da, Encumeada loc., 1300 m, 10.XI.2004, leg. KRÜGER & SALDAITIS.
- 7: *Noctua carvalhoi* ([BETHUNE]-BAKER, 1891) ♂, Azorean West, Flores Is. Caldeira Rasa, Marcela Mt., 721 m, 4.-8.VIII.2005, leg. KRÜGER & SALDAITIS.
- 8, 9: *Phlogophora wollastoni* ([BETHUNE]-BAKER, 1891) ♀, Madeira, Boca da, Encumeada loc., 1300 m, 10.XI.2004, leg. KRÜGER & SALDAITIS.

Colour plate 11a Farbtafel 11a (p. 292)

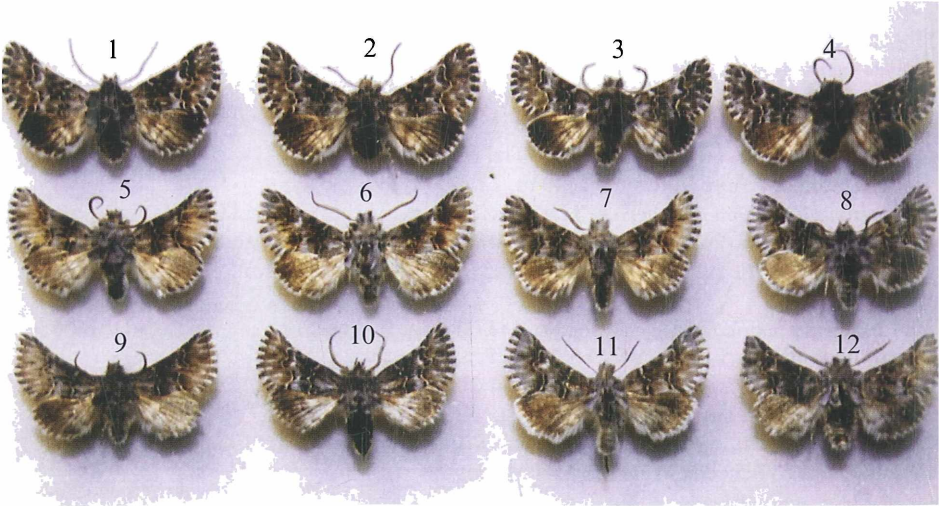
SALDAITIS, A. & P. IVINSKIS: Three new Noctuidae taxa from the Macaronesian archipelago (Lepidoptera). - Atalanta (August 2006) 37 (1/2): 245-254, Würzburg.

- 1-4: *Cleonymia baetica hoferi* **subspec. nov.**, Fuerteventura, Jandia, 19.I.-2.II.2002. leg. HOFER. 1, 2: Paratype ♀. 3: Paratype ♂. 4: Holotype ♂
- 5: *Cleonymia baetica diluta* ♂ Marokko, MA. Souk-El-Had. 1000-1200 m., 1-15.IV.1998, leg. TARRIER.
- 6, 7: *Cleonymia baetica diluta*. (ROTHSCHILD, 1911)
- 6: ♂, Marokko, A. A. O. E. Tepraoute, Tizi Mlil, 1400 m, 13.IV.1994.
- 7: ♂, Marokko, Aflor, Taliouine, 1500 m, 22.IV.[19] 99.
- 8: *Cleonymia baetica klapperichi* HACKER, 2001 ♂, Turkey, Prov. Urfa, Halfeti, valle of Euphrat, 500 m, 37° 52,5'E, 37° 14,5'N, 15-18. IV.1990. leg. B. HERZCIG & G RONKAY.
- 9: *Cleonymia baetica baetica* (RAMBUR, 1837) ♂, Valcuerna, 300 m, 3.IV.[19]98. Huesca. Espag.
- 10: *Cleonymia baetica baetica* (RAMBUR, 1837) ♂, Spain, Granada, Sierra Nevada, 1600 m., Puerto de la Ragua 5 km. NW, 29.5.2000. T. NUPPONEN leg.
- 11: *Cleonymia baetica klapperichi* HACKER, 2001 ♀, Iran, Prov. Fars, Saidatsahr, 1800 m, 2004.IV.10. leg. BENEDEK, HACZ & MAROSI.
- 12: *Cleonymia baetica klapperichi* HACKER, 2001 ♂, Iran, prov. Fars, 30 km NW of Ghir, 11. IV. 2004, leg. B. Benedek, T. HACZ & P. MAROSI.

Colour plate 11/ Farbtafel 11



Colour plate 11a/ Farbtafel 11a



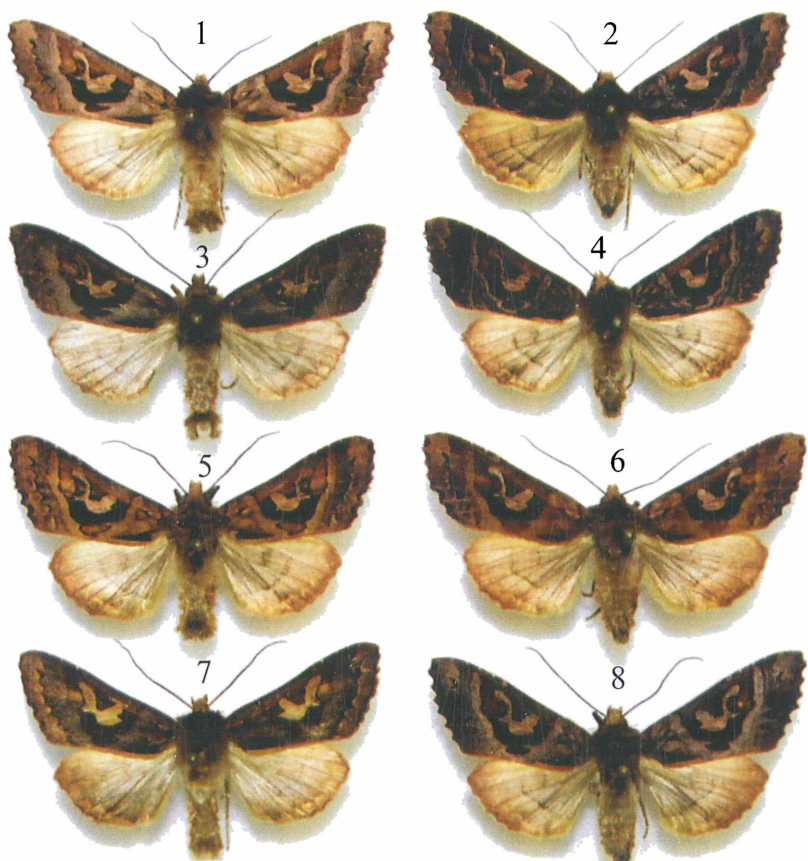
Colour plate 12/ Farbtafel 12



1: *Phlogophora jarmilae* **spec. nov.** type locality: Azorean East, Sao Miguel Isl., lake Lagoa, Azul, 813 m.

2: *Phlogophora kruegeri* **spec. nov.** type locality: Azorean West, Caldeira Rasa, Marcela Mt., 721 m.

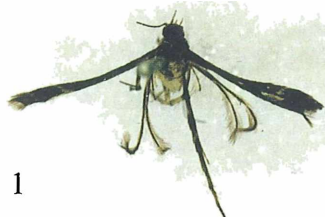
Colour plate 13/ Farbtafel 13



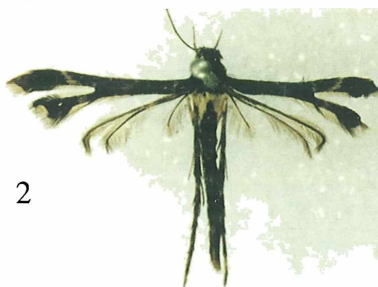
1-8: *Phlogophora kruegeri* **spec. nov.**, Azorean West, Caldeira Rasa, Marcela Mt., 721 m, 4.-8.VIII.2005, leg. KRÜGER & SALDAITIS.

1: Holotype ♂. 3, 5, 7: Paratype ♂. 2, 4, 6, 8: Paratype ♀.

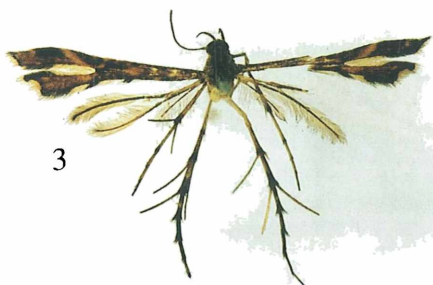
Colour plate 14/ Farbtafel 14



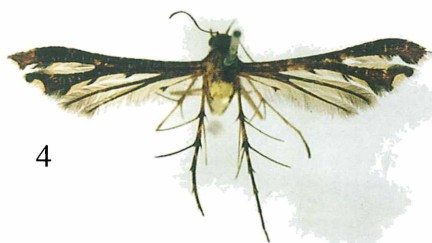
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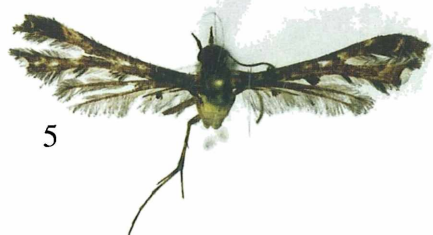
2



3



4



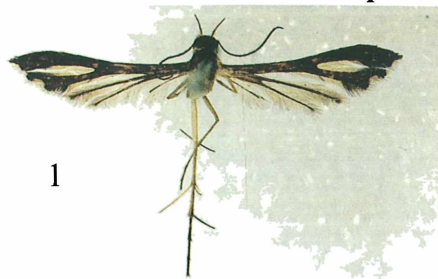
5



6

1. *Xyroptila oenophanes* MEYRICK, 1908, lectotype with labels.
2. *Xyroptila oenophanes* MEYRICK, 1908, syntype with labels.
3. *Xyroptila oenophanes* MEYRICK, 1908 ♂, no. 21384.
4. *Xyroptila peltastes* (MEYRICK, 1908) ♂, lectotype.
5. *Xyroptila vaughani* (FLETCHER, 1909) ♂, no. 21380.
6. *Xyroptila fulbae* spec. nov. ♂, no. 21382.

Colour plate 15/ Farbtafel 15



1



Cairns
Queensland
FPD. .10.00

♀
Pyrilidae
Brit. Mus.
Slide No.
19444

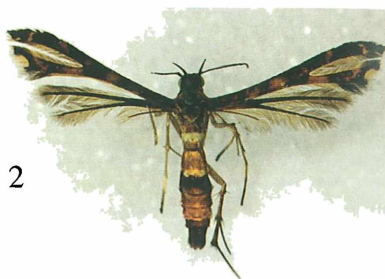
XYOPTILA Meyr.

marmarias Meyr.

Xyoptila
marmarias Meyr.
3/3

E. Meyrick det.
In Meyrick Coll.

XYOPTILA
MARMARIAS
MEYR.
det. Arenberger



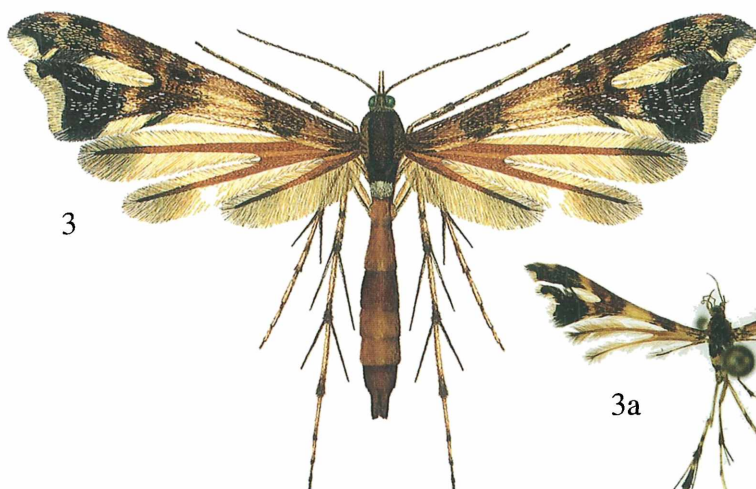
2



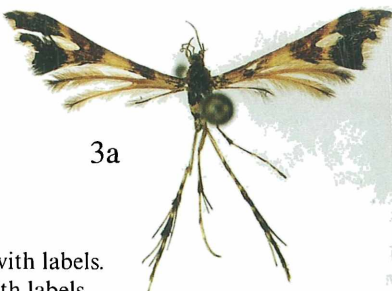
Cairns
Queensland
FPD. .10.06

Meyrick Coll.
B.M. 1998-290.

Xyoptila
marmarias
3/7 Meyr.
E. Meyrick det.
in Meyrick Coll.



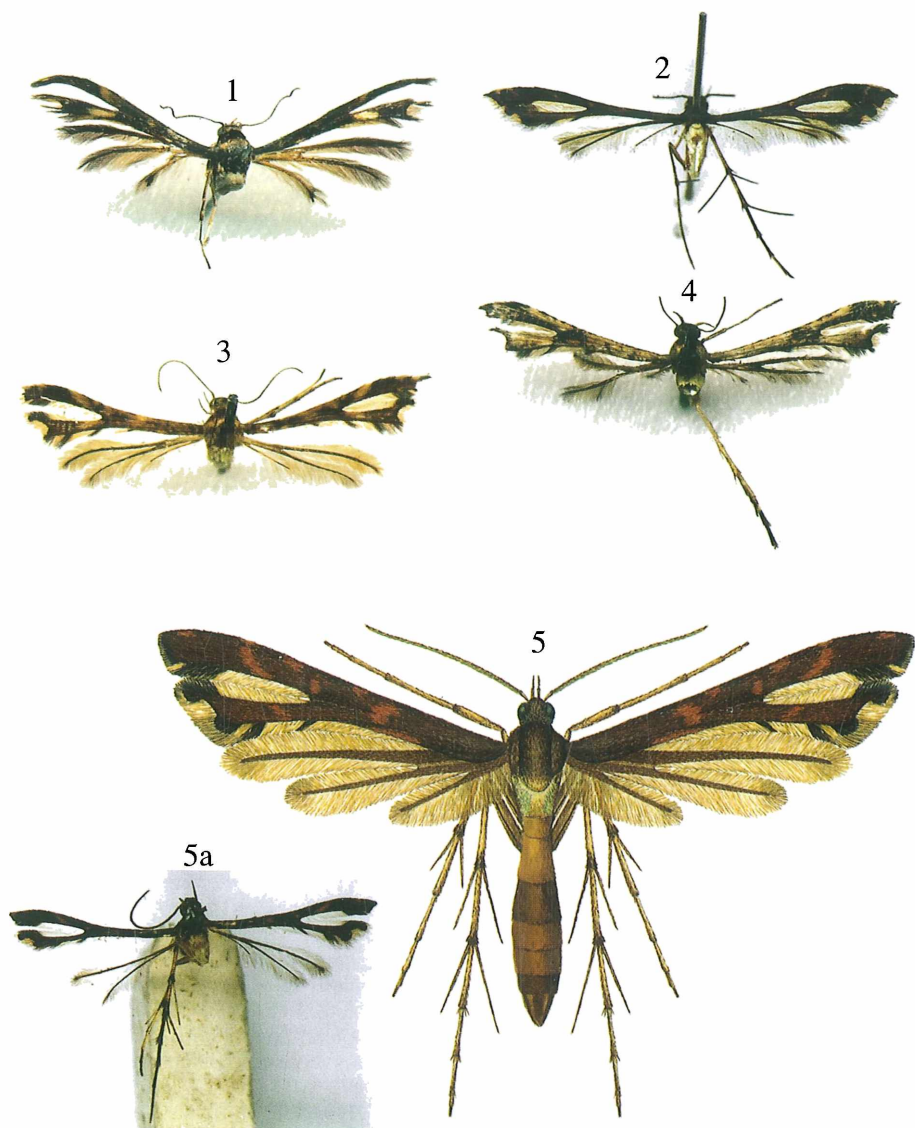
3



3a

1. *Xyoptila marmarias* MEYRICK, 1908, lectotype with labels.
2. *Xyoptila marmarias* MEYRICK, 1908, syntype with labels.
3. *Xyoptila irina* spec. nov. ♂
- 3 a. *Xyoptila irina* spec. nov. holotype ♂, no. 21440.

Colour plate 16/ Farbtafel 16



1. *Xyroptila naivasha* spec. nov. holotype ♀
2. *Xyroptila ruvenzori* spec. nov. holotype ♂.
3. *Xyroptila masaia* spec. nov. ♂, no. 21553.
4. *Xyroptila elegans* spec. nov., ♂ holotype.
5. *Xyroptila oksana* spec. nov. ♂.
- 5a. *Xyroptila oksana* spec. nov. ♂ holotype.